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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/582,351	08/11/2000	TOSHIYUKI NAKAYAMA	106386	3351
25944	7590	03/01/2004	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			CHU, CHRIS C	
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/582,351

Applicant(s)

NAKAYAMA, TOSHIYUKI

Examiner

Chris C. Chu

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 10, 12 - 19 and 21 - 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 10, 12 - 19 and 21 - 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)     | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Response to Amendment*

1. Applicant's amendment filed on November 21, 2003 has been received and entered in the case.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3 – 10, 12, 14 – 19 and 21 - 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Venkateshwaran et al. '822.

Regarding claims 1 and 12, Venkateshwaran et al. discloses in e.g., Fig. 1, column 5, lines 18 – 56 and column 7, lines 38 - 45 a semiconductor device (10) comprising:

- a semiconductor chip (15a) having a plurality of electrodes (16);
- a substrate (13) on which is formed a plurality of leads (12d) and an undivided film (12a), said undivided film opposed to said semiconductor chip; and
- an adhesive (at the under filled portion of the element-17) provided between a surface (15b) of the semiconductor chip on which the electrodes are formed and a surface of

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- the substrate (13) on which said leads and said undivided film are formed, to adhere the semiconductor chip and the substrate,
- said adhesive disposed on the whole of said undivided film,
  - wherein at least one of the plurality of electrodes (16) and at least one of the plurality of leads (12d) are electrically connected; and
  - wherein said undivided film (12a) is formed with a lower adhesion to the adhesive (28) than a base material of the substrate, and the undivided film is broader than each of the leads at their portions opposed to the electrodes,
  - wherein a region on which the adhesive is disposed includes a first region (at the surface area of die pad 12a) with low adhesion to the adhesive and a second region (at the gap or space between the die pad 12a and the leads 12d) with high adhesion to the adhesive,
  - an area of the first region being  $\geq$  an area of the second region.

Inherently, copper has lower adhesion to any molding material than polyimide to the molding material.

Regarding claim 3, Venkateshwaran et al. discloses in e.g., column 5, lines 45 - 55 said leads and said undivided film being formed by etching a conductive foil adhered to said base material of said substrate.

Regarding claim 4, Venkateshwaran et al. discloses in e.g., column 5, lines 45 - 55 a conductive foil used when forming said leads is also used to form said undivided film.

Regarding claim 5, Venkateshwaran et al. discloses in e.g., column 5, lines 45 - 55 said undivided film being formed simultaneously with said leads.

Regarding claims 6 and 15, Venkateshwaran et al. discloses in e.g., Fig. 1, column 5, lines 18 – 56 and column 7, lines 38 – 45 the electrodes (16) being provided on an extremity of the surface of the semiconductor chip (15a); and the undivided film (12a) is formed in a region opposing a central part of the surface of the semiconductor chip.

Regarding claims 7 and 16, Venkateshwaran et al. discloses in e.g., Fig. 1, column 5, lines 18 – 56 and column 7, lines 38 – 45 the undivided film (12a) being formed to spread two-dimensionally, with at least one opening exposing a surface of the substrate.

Regarding claims 8 and 17, Venkateshwaran et al. discloses in e.g., Fig. 1, column 5, lines 18 – 56 and column 7, lines 38 – 45 the undivided film (12a) being formed to project outside a region in which the semiconductor chip is adhered.

Regarding claims 9 and 18, Venkateshwaran et al. discloses in e.g., Fig. 1, column 5, lines 18 – 56 and column 7, lines 38 – 45 the undivided film (12a) being formed to be symmetrical about a center point of a region in which the semiconductor chip is adhered.

Regarding claims 10 and 19, Venkateshwaran et al. discloses in e.g., Fig. 1, column 5, lines 18 – 56 and column 7, lines 38 – 45 the undivided film (12a) being formed to avoid at least one of the leads.

Regarding claim 14, Venkateshwaran et al. discloses in e.g., Fig. 1, column 5, lines 18 – 56 and column 7, lines 38 – 45 said leads and said undivided film being formed of the same electrically conductive material.

Regarding claims 21 and 22, these claims merely recite the intended use or the environment in which the semiconductor device of claim 12 is intended to be used. Since the

claims fail to define any additional structure, Venkateshwaran et al. anticipates these claims as well.

Regarding claims 23, the method steps are disclosed by Venkateshwaran et al. for the same reasons provided below paragraph at the device claim 24.

Regarding claim 24, Venkateshwaran et al. discloses in e.g., Fig. 1, column 5, lines 18 – 56 and column 7, lines 38 – 45 the plurality of leads (12d) including a first lead (12d, at the right side) on said substrate and a second lead (12d, at the left side) which is closest to said first lead on said substrate, and a part of said undivided film (12a) is put between the first and second leads.

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Venkateshwaran et al. in view of Oda (JP-07169795).

Venkateshwaran et al. discloses the claimed invention except for the adhesive being formed of an anisotropic conductive material having conductive particles dispersed in an insulating material. However, Oda teaches the adhesive (108 in Fig. 1) being formed of an anisotropic conductive material having conductive particles dispersed in an insulating material (see Fig. 1 and read abstract). Thus, it would have been obvious to one of ordinary skill in the art

at the time when the invention was made to modify Venkateshwaran et al. by using the adhesive to be formed of an anisotropic conductive material which is having conductive particles dispersed in an insulating material as taught by Oda. The ordinary artisan would have been motivated to modify Venkateshwaran et al. in the manner described above for at least the purpose of (1) increasing electric connections and (2) decreasing the height of the package.

***Response to Arguments***

6. Applicant's arguments with respect to claims 1 and 12 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

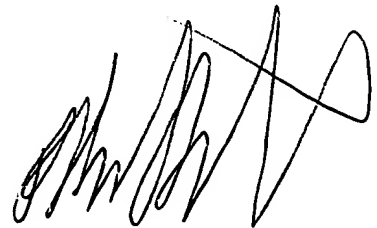
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is 571-272-1724. The examiner can normally be reached on 11:30 - 8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 517-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

c.c.  
2/19/04 10:48:20 PM

A handwritten signature in black ink, appearing to read 'Bradley Baumeister', with a large, sweeping flourish at the end.

**BRADLEY BAUMEISTER  
PRIMARY EXAMINER**